REMARKS

The Official Action mailed July 30, 2003, has been received and its contents carefully noted. This response is filed within three months of the mailing date of the Official Action and therefore is believed to be timely without extension of time. Accordingly, the Applicants respectfully submit that this response is being timely filed.

The Applicants note with appreciation the consideration of the Information Disclosure Statements filed on July 12, 2000, and July 8, 2002.

Claims 20-24 are pending in the present application, of which claims 20 and 24 are independent. Claim 20 has been amended to better recite the features of the present invention. For the reasons set forth in detail below, all claims are believed to be in condition for allowance. Favorable reconsideration is requested.

Paragraph 1 of the Official Action objects to claim 21 asserting that the phrase "a longer axis direction of a far field pattern of said real laser light source" is vague, confusing, and indefinite since it is not clear what is considered as the pattern of the laser light source; that the phrase "column direction of the hologram patterns" is not clear; that it is not clear how the column direction relates to the pattern of the hologram; and that the meaning of aligning the column direction with the longer axis direction of the light pattern is unclear (page 2, Paper No. 10). Initially, it is noted that the Examiner appears to be referring to claim 22 of the present invention which recites "wherein a column direction of the hologram patterns of said hologram member is aligned with a longer axis direction of a far field pattern of said real laser light source." The Applicants respectfully direct the Examiner's attention to page 6, line 12 to page 7, line 17; page 12, lines 11-15; page 13, lines 5-20; and page 20, lines 18-22. In view of the specification, the Applicants submit that the specification fully supports and describes the claimed features of the present invention in a manner which is clear and definite to one of ordinary skill in the art. Therefore, the Applicants request that the objection be reconsidered and withdrawn.

Paragraph 2 of the Official Action rejects claims 20, 22 and 23 as obvious based on the combination of U.S. Patent No. 5,828,643 to Takeda et al. and U.S. Patent No. 5,986,779 to Tanaka et al. The Applicants respectfully submit that a *prima facie* case of obviousness cannot be maintained against the independent claims of the present invention, as amended.

As stated in MPEP §§ 2142-2143.01, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." In re Kotzab, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Takeda and Tanaka do not teach or suggest that hologram patterns of a hologram member are determined so that diffraction light is given an inverse aberration of an aberration to be caused by optical elements in an optical path from a real laser light source to a recording medium, and the aberration to be caused by optical elements including an aberration occurring when the light is diffracted at the hologram member.

Independent claim 20 has been amended to better recite the features of the present invention. Specifically, claim 20 recites that an aberration caused by optical elements occurs when light is diffracted at a hologram member.

A problem in the prior art is described in the specification at page 2, line 24 to page 3, line 12, as follows:

> Although only a single semiconductor laser can be used with the diffraction grating 64 and manufacture cost can be lowered, it is necessary to mount the diffraction grating 64 at the position as near to the semiconductor laser as possible in order to make compact the optical pickup device. In this case, as shown in Fig. 9, the nearer to the semiconductor laser the diffraction grating is mounted, the larger the angle θ between the light beam incident upon the diffraction grating 64 from the real laser light source 11 and the diffraction light beam emitted from the diffraction grating 64 (θ1 > θ2). Therefore, astigmatism and coma of a light spot become large, which make the diameters of light spots 25a, 25b, and 25c larger and increase jitters in a reproduced signal.

As seen from the above description in the specification, the problem which the present invention confronts resides in the occurrence of an aberration due to diffraction of light at the hologram member serving as a diffraction grating. The present invention resolves this aberration occurring at the hologram member.

Takeda and Tanaka do not teach or suggest that the aberration to be caused by optical elements includes an aberration occurring when the light is diffracted at the hologram member. Besides, the cited prior art references do not recognize the problem of an aberration occurring at the hologram member and do not teach or suggest a solution to the problem. Since Takeda and Tanaka do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained.

Furthermore, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify Takeda and Tanaka or to combine reference teachings to achieve the claimed invention.

The Official Action concedes that Takeda does not teach "that the hologram/diffraction grating patterns are designed to correct the aberrations of the

optical elements in the optical pickup device" (page 3, Paper No. 19). The Official Action relies on Tanaka to allegedly teach "an optical pickup apparatus having a hologram and objective lens wherein the hologram can be designed to correct the aberrations introduced by the optical system including the objective lens" (Id. citing Tanaka at column 1, lines 35-45). The Official Action asserts that "[it] would then have been obvious to one skilled in the art to apply the teaching of Tanaka et al to modify the holographic optical element of Takeda et al to also correct the aberrations generated by the optical system for the benefit of enhancing the quality of the light spots formed on the recording medium" (Id.). The Applicants respectfully disagree. As noted above, Takeda and Tanaka do not recognize the problem of an aberration occurring at the hologram member; therefore, it would not have been obvious to combine the devices of Takeda and Tanaka in order to solve the problem of an aberration occurring at the hologram member.

Even assuming motivation could be found, the Official Action has not given any indication that one with ordinary skill in the art at the time of the invention would have had a reasonable expectation of success when combining Takeda and Tanaka.

The Applicants further contend that even assuming, *arguendo*, that the combination of Takeda and Tanaka is proper, there is a lack of suggestion as to why a skilled artisan would use the proposed modifications to achieve the unobvious advantages first recognized by the Applicants. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.

For the reasons stated above, the Official Action has not formed a proper *prima facie* case of obviousness. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Paragraph 3 of the Official Action rejects claims 21 as obvious based on the combination of Takeda, Tanaka, and U.S. Patent No. 5,422,753 to Harris. Harris does not cure the deficiencies in Takeda and Tanaka. The Official Action relies on Harris to

allegedly teach the features of an undiffracted zero order, uniform intensity scanning beam 52. Takeda, Tanaka and Harris, either alone or in combination, do not teach or suggest that an aberration caused by optical elements occurs when light is diffracted at a hologram member. Since Takeda, Tanaka and Harris do not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Paragraph 4 of the Official Action rejects claim 24 as obvious based on Harris.

The prior art, either alone or in combination, does not teach or suggest all the features of the independent claims, as amended. Harris does not teach or suggest that a hologram member has a hologram pattern which provides a uniform intensity of a servo light spot in a whole servo light spot area.

The Official Action asserts that "Harris teaches that the binary diffractive structure has a relief phase grating structure [20] that provides a uniform intensity for the non-diffracted light that forms the light spot" (page 5, Paper No. 19, citing column 8 of Harris). The Applicants respectfully disagree. Unlike the present invention, Harris is directed to a technique of scanning a light beam on a photoreceptor medium, and Harris aims to provide uniform intensity for the scanning beam. This is clear from the description in the specification and drawings of Harris. For example, at column 6, line 62 through column 7, line 6, Harris states the following:

> The positions of the scanning beam with the minimum intensity will be minimally diffracted by the surface relief phase grating structure of the binary diffractive optical element while positions of the scanning beam with the maximum intensity will be maximally diffracted by the surface relief phase grating structure of the binary diffractive optical element . . .[t]he surface relief phase grating structures are scaled to the intensity level of the scanning beam.
>
> As shown in Fig. 4, this matching of intensity level to surface relief phase grating structures provides a uniform lower intensity 74, equal to the intensity at the ends of the scan line 66 and 68.

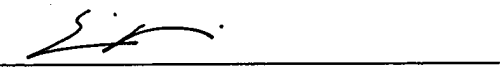
This is clearly different from the technique of the present invention, which is directed to a uniform intensity of a light spot. In short, the Harris technique aims to reduce a difference in intensity among a plurality of light beams; whereas, the present invention is directed to a uniform intensity distribution within an area of a single light spot. Therefore, the Harris technique and the present invention are essentially different from each other.

Also, the Official Action asserts that Harris teaches "an optical section (18) that serves as the light forming element for forming a light spot" (Id.). The Applicants disagree that Harris teaches a light spot. At best, Harris appears to be concerned with a "light beam" but not a "light spot." Therefore, Harris does not teach or suggest that a hologram member has a hologram pattern which provides a uniform intensity of a servo light spot in a whole servo light spot area.

Since Harris does not teach or suggest all the claim limitations, a *prima facie* case of obviousness cannot be maintained. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103(a) are in order and respectfully requested.

Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact the Applicants' undersigned attorney at the telephone number listed below.

Respectfully submitted,



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